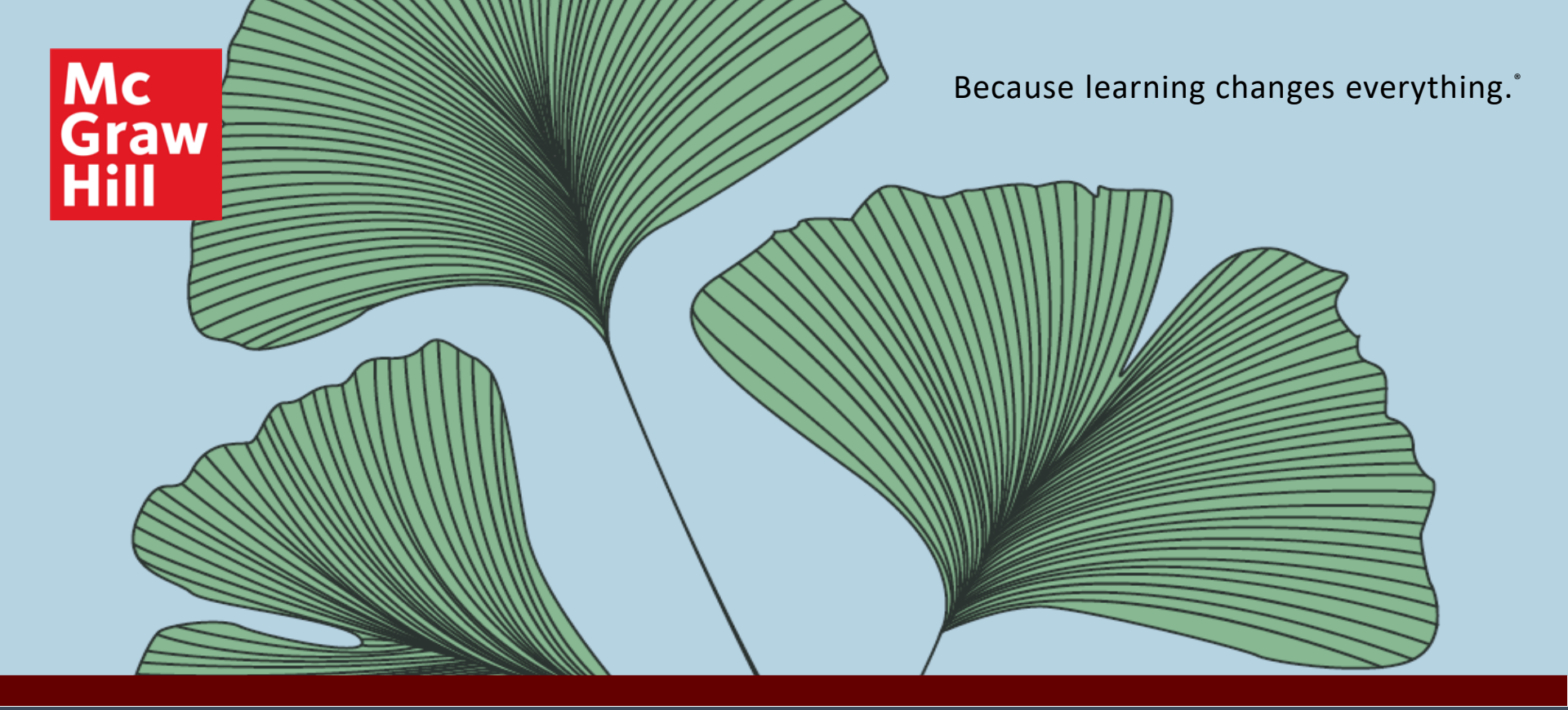

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Chapter 11

Aggregate Demand, Aggregate Supply, and Inflation

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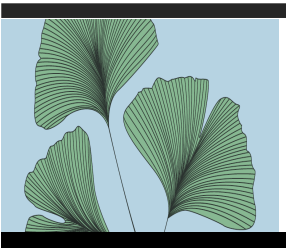

Learning Objectives

1. Define the aggregate demand curve, explain why it slopes downward, and explain what may shift it.
2. Define the long-run and short-run aggregate supply curves, explain their orientation, and explain what may shift them. In particular, show how the curves capture the idea of inflation inertia and the link between inflation and the output gap.
3. Analyze how the economy is affected by aggregate spending shocks, inflation shocks, and shocks to potential output.
4. Discuss the short-run and long-run effects of an anti-inflationary monetary policy.

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Inflation, Spending, and Output: The Aggregate Demand Curve

Aggregate demand (*AD*) curve.

- Shows the relationship between short-run equilibrium output *Y* and the rate of inflation, π.
- The name of the curve reflects the fact that short-run equilibrium output is determined by, and equals, total planned spending in the economy.
- Increases in inflation reduce planned spending and short-run equilibrium output, so the aggregate demand curve is downward-sloping.

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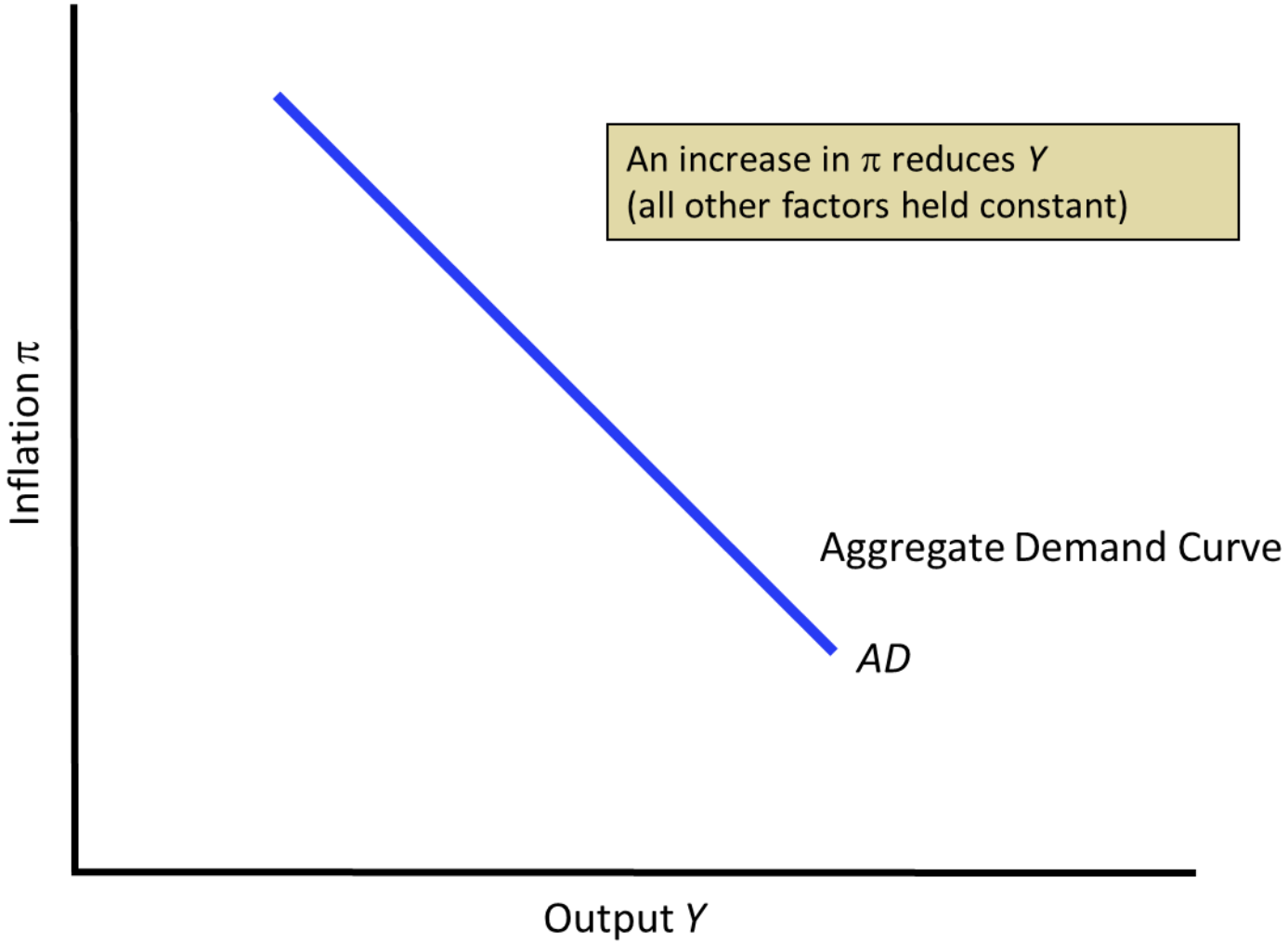
The Aggregate Demand Curve



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Inflation, the Fed, and Why the AD Curve Slopes Downward

- The Keynesian model assumes output adjusts to demand at preset prices in the short run.
- Prices do not remain fixed indefinitely.
- The Keynesian model does not explain the behavior of inflation.

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Other Reasons Why AD Slopes Downward

- **Distributional effects**: Inflation hurts people with lower incomes more. These people also spend more of their income, so *Y* drops when their income does.
- **Uncertainty**: Inflation → uncertainty about future prices, so people may be more cautious in spending.
- **Exports**: Inflation → Prices of exported goods rises, lowering exports.

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Factors that Shift the AD Curve 1

Movements along the *AD* curve.

- π and *Y* are inversely related.
- Changes in π cause a change in *Y* or a movement along the *AD* curve.
- π increases → *r* increases → spending decreases → *Y* decreases.

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Factors that Shift the AD Curve 2

Shifts of the *AD* Curve.

- Any factor that changes *Y* at a given π shifts the *AD* curve.
- **Shifts of the *AD* curve can be caused by:**
  - Changes in exogenous spending.
  - Changes in the Fed's policy reaction function.

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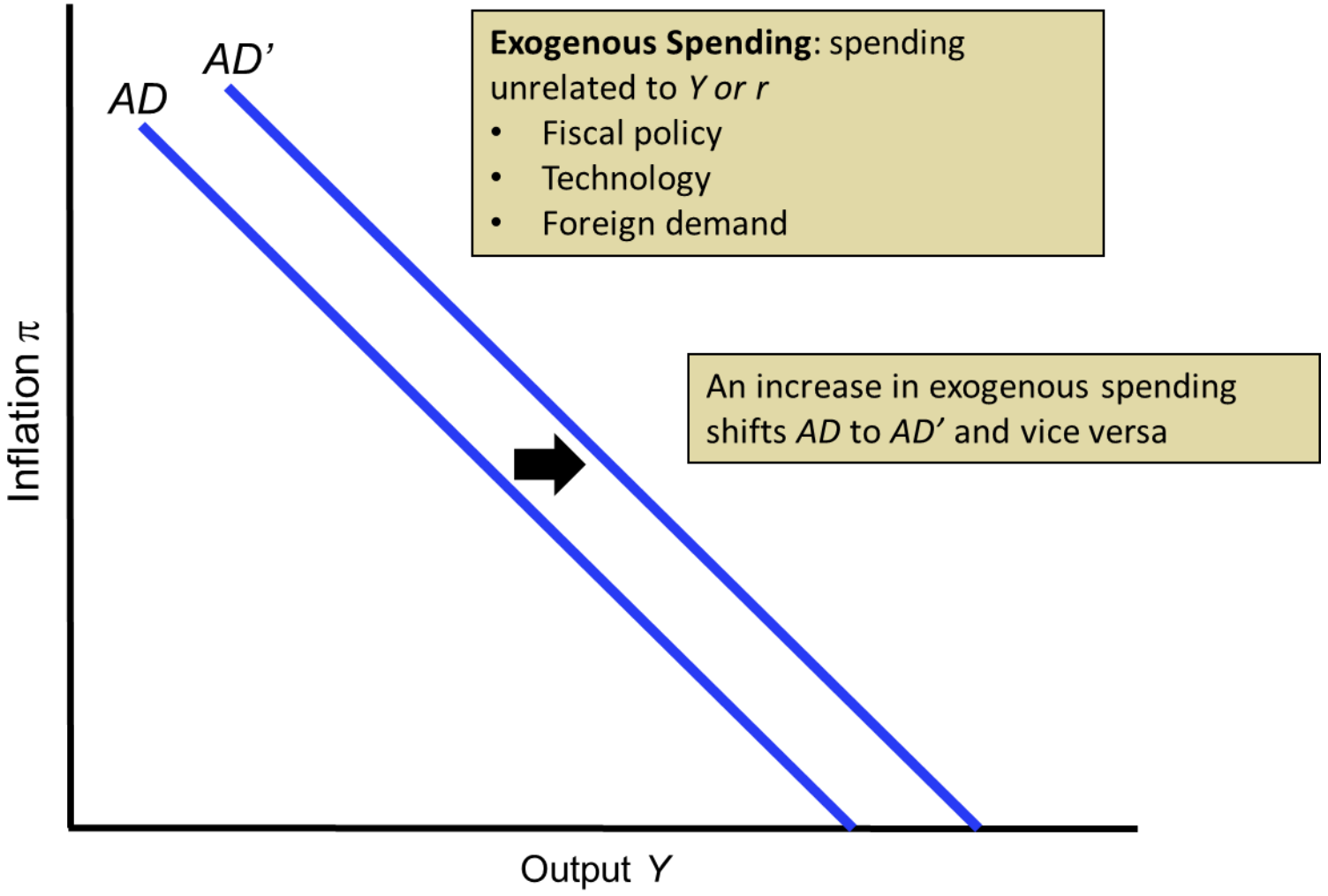
Effect of an Increase in Exogenous Spending



Exogenous Spending: spending unrelated to *Y or r*

- Fiscal policy
- Technology
- Foreign demand

An increase in exogenous spending shifts *AD* to *AD'* and vice versa

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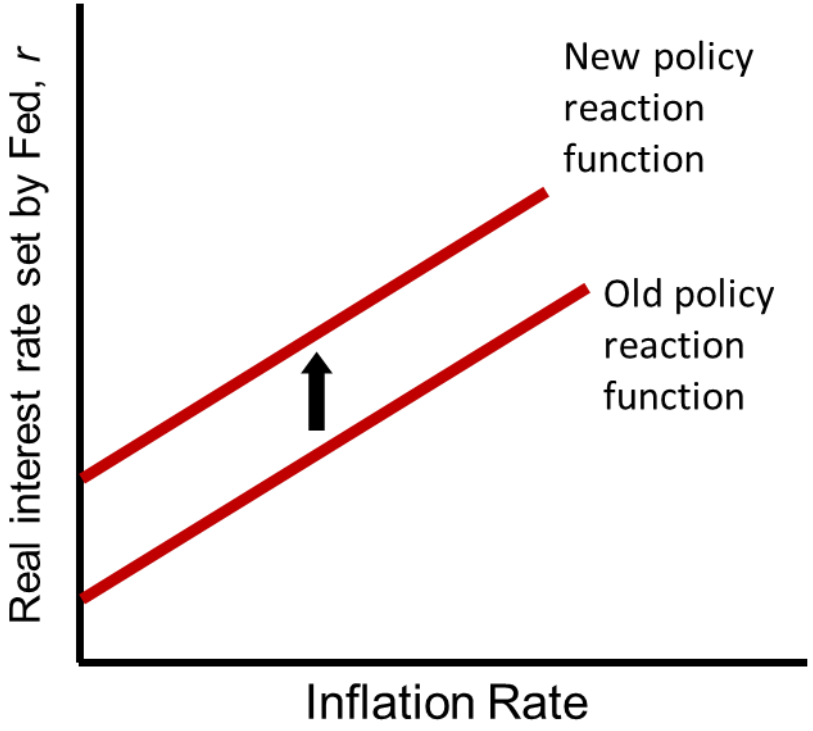
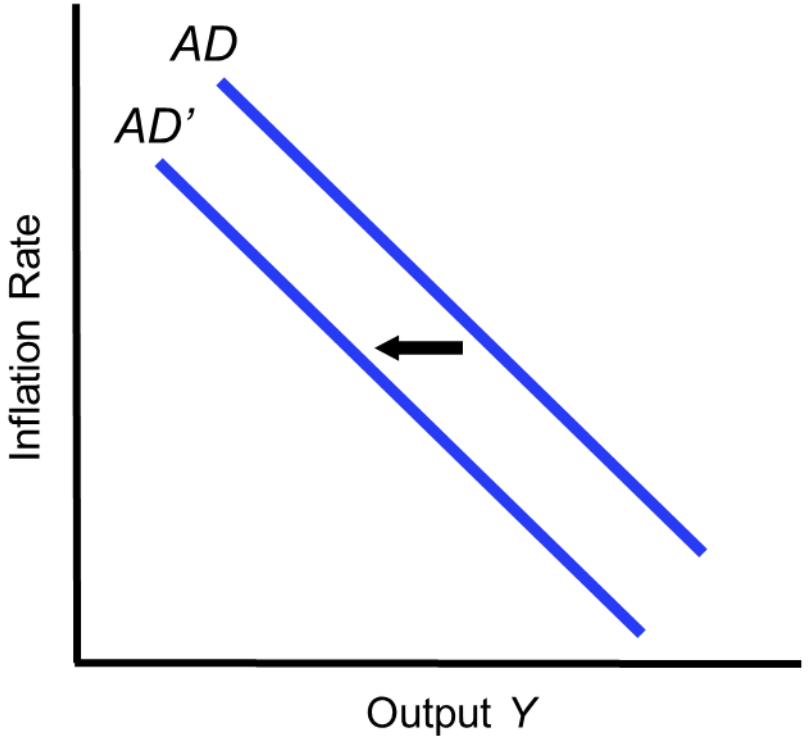
A Shift in the Fed's Policy Reaction Function



Fed "tightens" monetary policy – shifting reaction curve



The new Fed policy increases *r* and *AD* shifts to *AD*

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Inflation and Aggregate Supply 1

Inflation will remain roughly constant, or have *inertia*, if operating at *Y** and there are no external shocks to the price level.

- In industrial economies (U.S.), inflation tends to change slowly from year to year.
- The ***inflation inertia*** occurs for two reasons:
  - Inflation expectations.
  - Long-term wage and price contracts.

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Inflation Expectations

- The public must negotiate wages and prices for future sales.
- The prices they agree to will be based on their *expectations* about inflation.
- If you think there will be high inflation, you'll agree to much higher prices.
- This can lead to actual inflation as prices rise.

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Long-Term Wage and Price Contracts

- Union wage contracts set wages for several years.
- Contracts setting the price of raw materials and parts for manufacturing firms also cover several years.
- These long-term contracts reflect the inflation expectations at the time they are signed.

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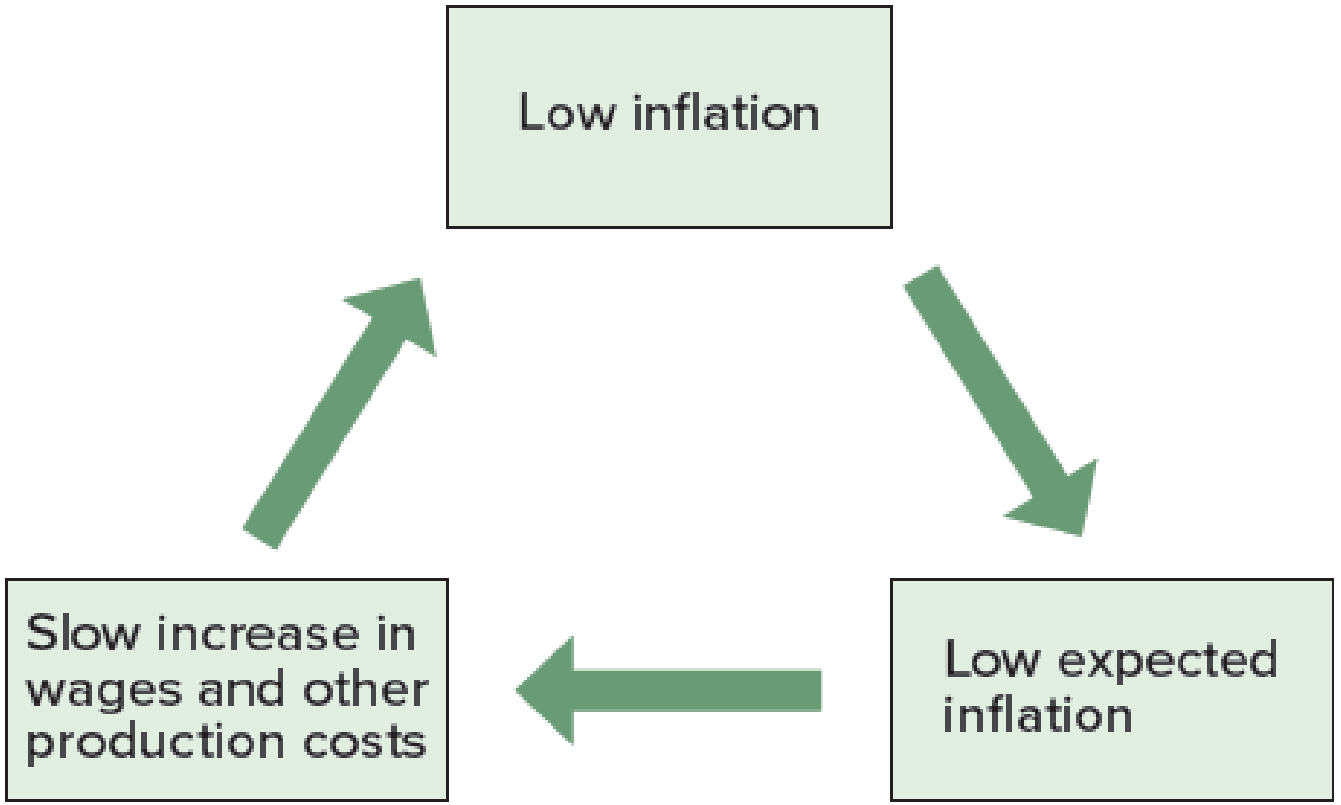
A Virtuous Circle of Low Inflation and Low Expected Inflation



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Inflation and Aggregate Supply 2

Three factors that can increase the inflation rate.

- Output gap.
- Inflation shock.
- Shock to potential output.

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The Output Gap and Inflation

Relationship of output to potential output		Behavior of inflation
1. No output gap $Y = Y^*$	→	Inflation remains unchanged
2. Expansionary gap $Y > Y^*$	→	Inflation rises $\pi \uparrow$
3. Recessionary gap $Y < Y^*$	→	Inflation falls $\pi \downarrow$

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The Aggregate Demand-Aggregate Supply Diagram 1

Long-run aggregate supply (*LRAS*).

- A vertical line showing the economy's potential output *Y**.

Short-run Aggregate Supply (*SRAS*).

- A horizontal line showing the current rate of inflation, as determined by past expectations and pricing decisions.

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The Aggregate Demand-Aggregate Supply Diagram 2

Short-run equilibrium.

- A situation in which inflation equals the value determined by past expectations and pricing decisions and output equals the level of short-run equilibrium output that is consistent with that inflation rate.
- Graphically, short-run equilibrium occurs at the intersection of the *AD* curve and the *SRAS* line.

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The Aggregate Demand-Aggregate Supply Diagram 3

Long-run equilibrium.

- A situation in which actual output equals potential output and the inflation rate is stable.
- Graphically, long-run equilibrium occurs when the *AD* curve, the *SRAS* line, and the *LRAS* line all intersect at a single point.

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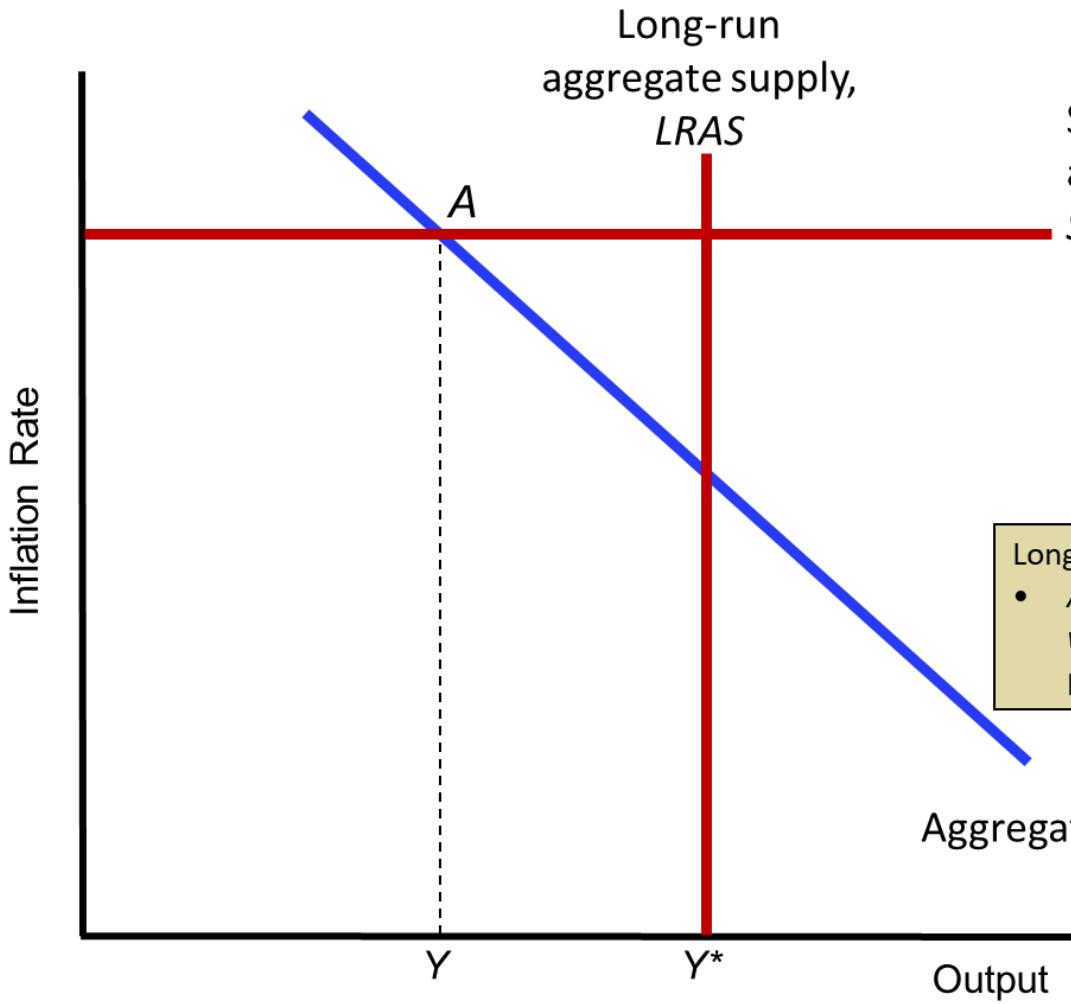
The Aggregate Demand-Aggregate Supply (*AD-AS*) Diagram 1



Short-run equilibrium A
- *Y: SRAS(π) = AD*
- *Y < Y** -- recessionary gap
- *π and Y* adjust to the gap
  - *π* decreases *& Y* increases

Long-run equilibrium B
- *AD, SRAS (π*), LRAS (Y*) will* intersect at the same point

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The Aggregate Demand-Aggregate Supply (*AD-AS)* Diagram 2

A Review of the Adjustment Process to a Recessionary Gap.

- Firms that are selling less than they want to will start to lower prices.
- As π falls the Fed lowers *r* and *AD* increases.
- Falling π reduces uncertainty which also increases *AD.*
- As *Y* increases, cyclical unemployment falls.
- Adjustment continues until long-run equilibrium is reached.

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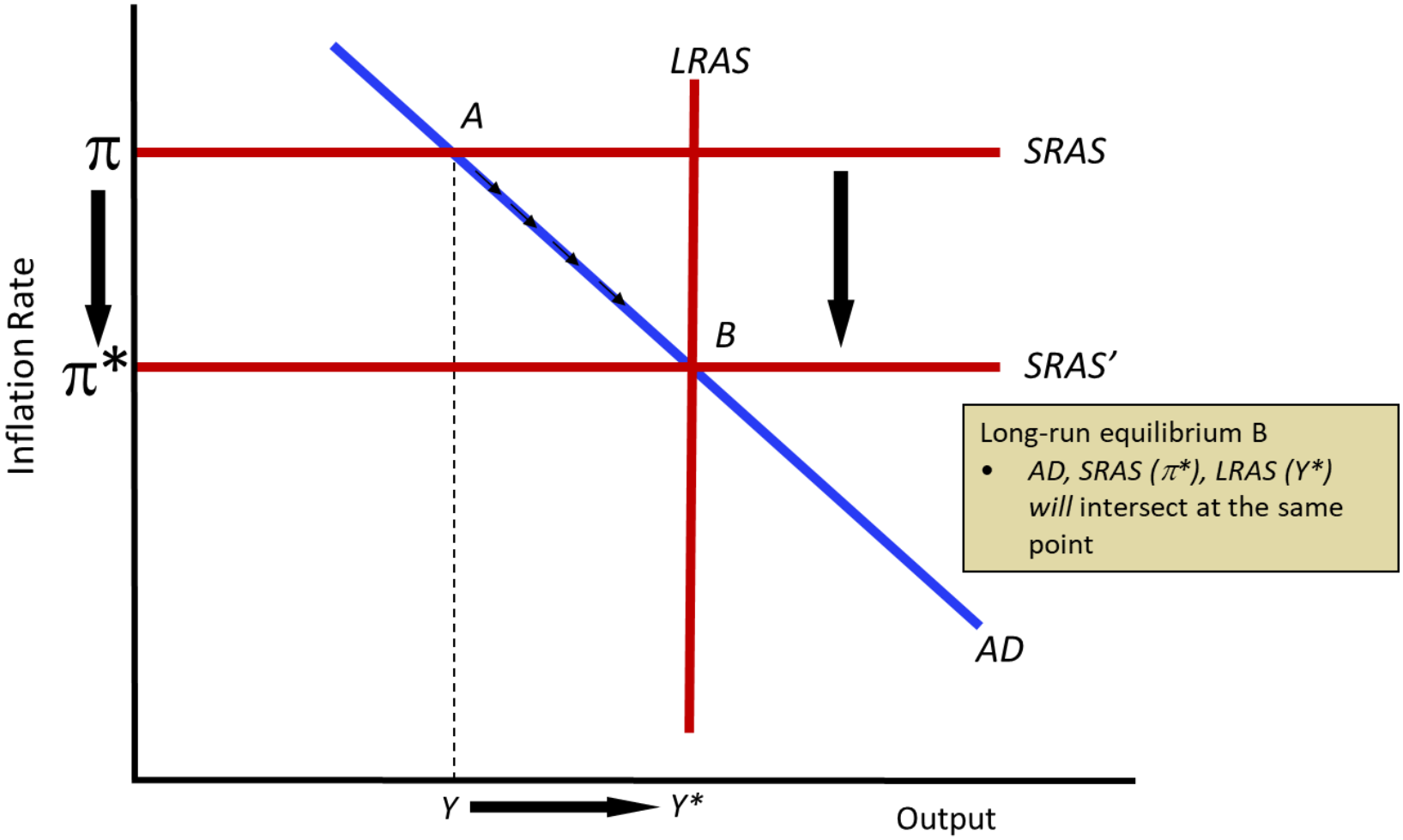
The Adjustment of Inflation When a Recessionary Gap Exists



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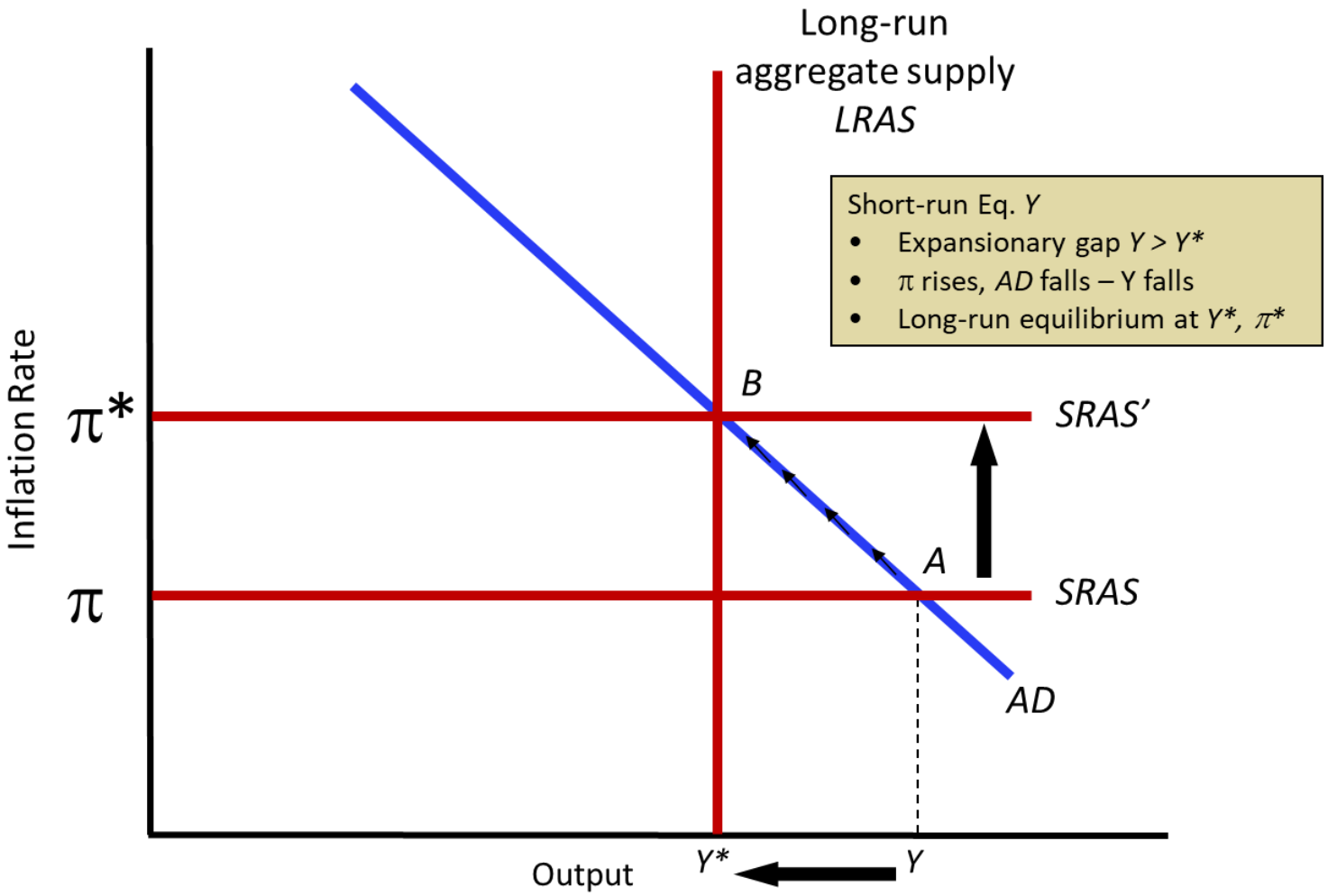
The Adjustment of Inflation When an Expansionary Gap Exists



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The Self-Correcting Economy 1

- **In the long-run the economy tends to be self-correcting.**
- The Keynesian model does not include a self-correcting mechanism.
- The Keynesian model concentrates on the **short-run** with no price adjustment.
- The self-correcting mechanism concentrates on the long-run with price adjustments.

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The Self-Correcting Economy 2

A slow self-correcting mechanism.

- Fiscal and monetary policy can help stabilize the economy.

A fast self-correcting mechanism.

- Fiscal and monetary policy are not effective and may destabilize the economy.

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The Self-Correcting Economy 3

The speed of correction will depend on:

- The use of long-term contracts.
- The efficiency and flexibility of labor markets.

Fiscal and monetary policy are most useful when attempting to eliminate large output gaps.

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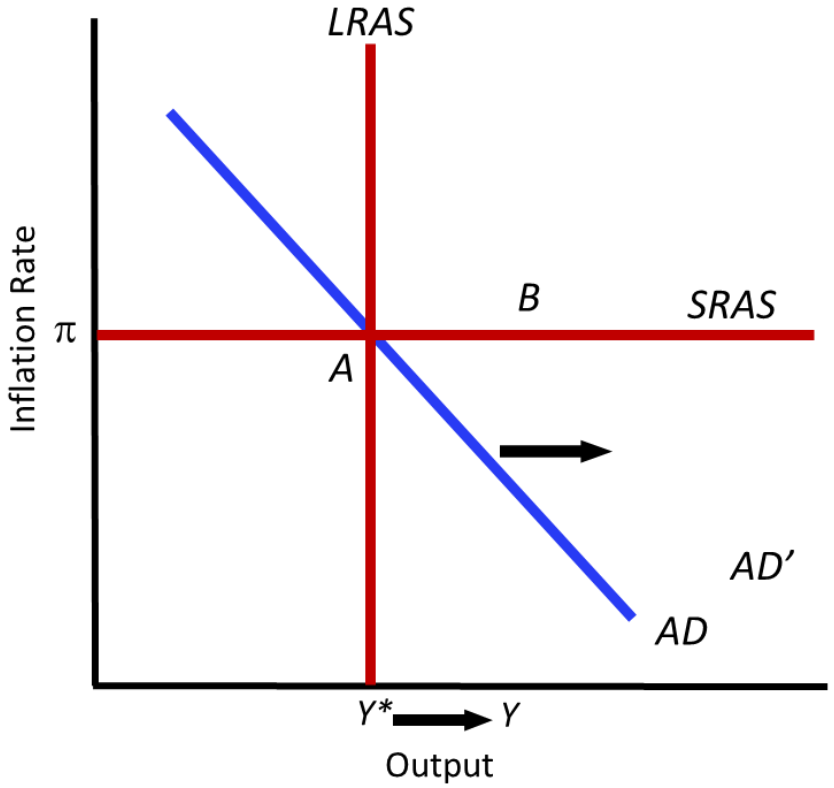
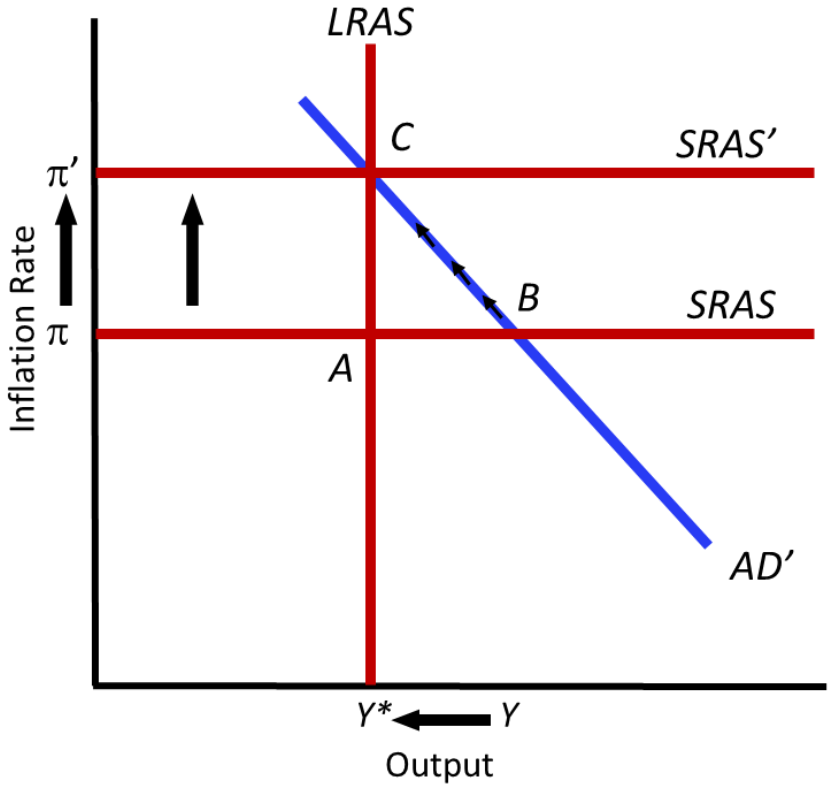
War and Military Buildup as a Source of Inflation

Military spending increase → AD increase → Expansionary gap (Y > Y*) → π increases → SRAS shifts to SRAS′ → Long-run equilibrium Y* and π*





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How Did Inflation Get Started in the 1960s?

In 1959-63 inflation averaged about 1%.

By 1970 inflation was 6%.

Fiscal Policy.

- Increases in defense spending.
  - 1962-65 = $70 billion.
  - 1968 = $100 billion.

Monetary Policy.

- The Fed did not try to offset the increase in government spending.

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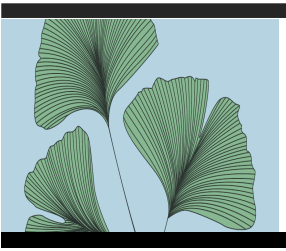

Inflation Shocks

Inflation Shock.

- A sudden change in the normal behavior of inflation, unrelated to the nation's output gap.

Inflation Shock: Examples.

- OPEC embargo of 1973.
- Drop in oil prices in 1986.

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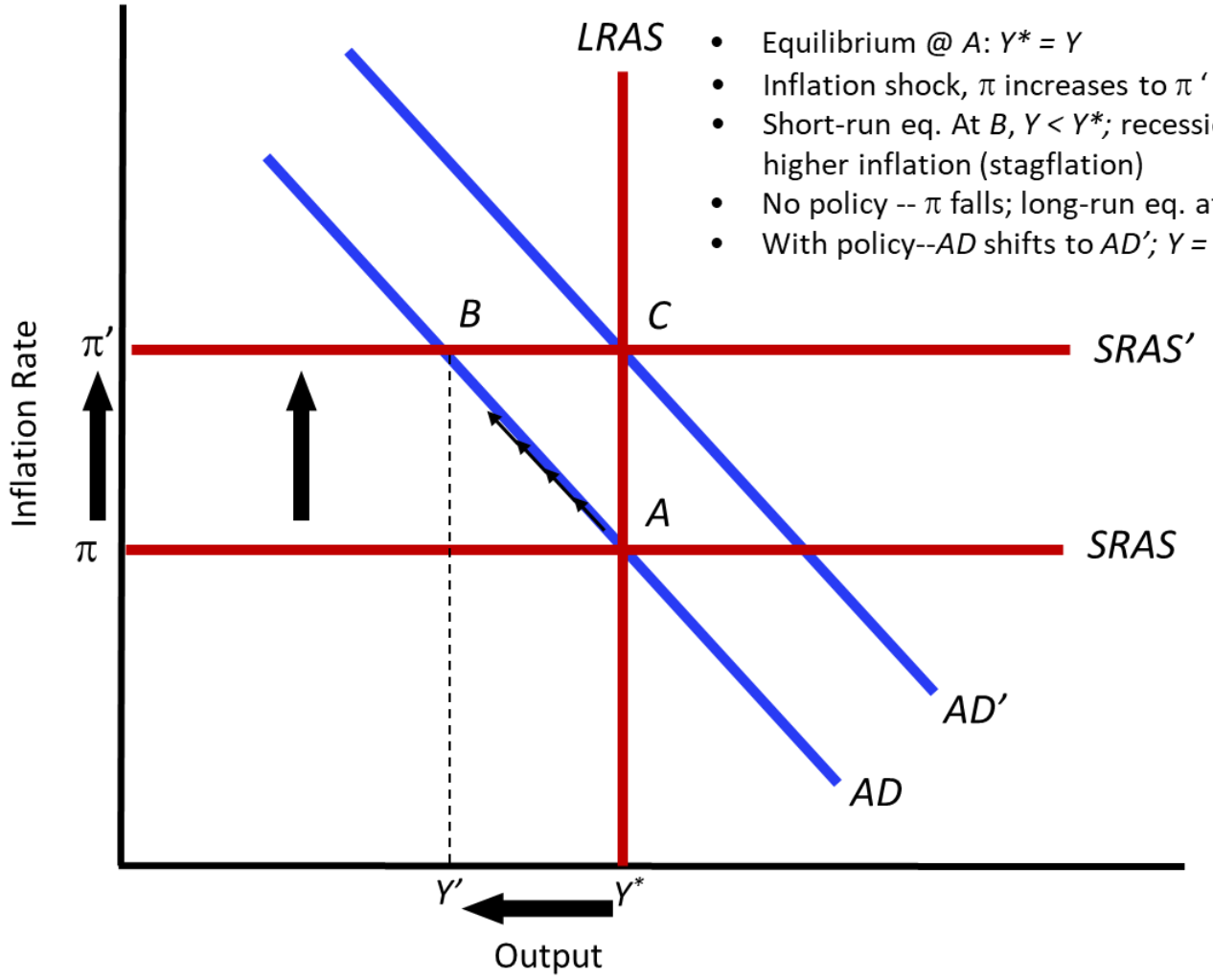
The Effects of An Adverse Inflation Shock



- Equilibrium @ *A*: *Y* = Y*
- Inflation shock, π increases to π ' (*SRAS'*)
- Short-run eq. At *B*, *Y < Y*;* recessionary gap and higher inflation (stagflation)
- No policy -- π falls; long-run eq. at *A*
- With policy--*AD* shifts to *AD'; Y = Y*;* π rises to π *

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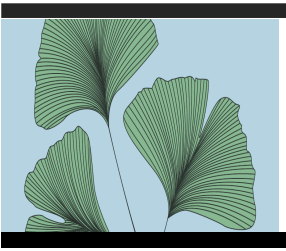

Shocks to Potential Output

Aggregate Supply Shock.

- Either an inflation shock or a shock to potential output.
- Adverse aggregate supply shocks of both types reduce output and increase inflation.

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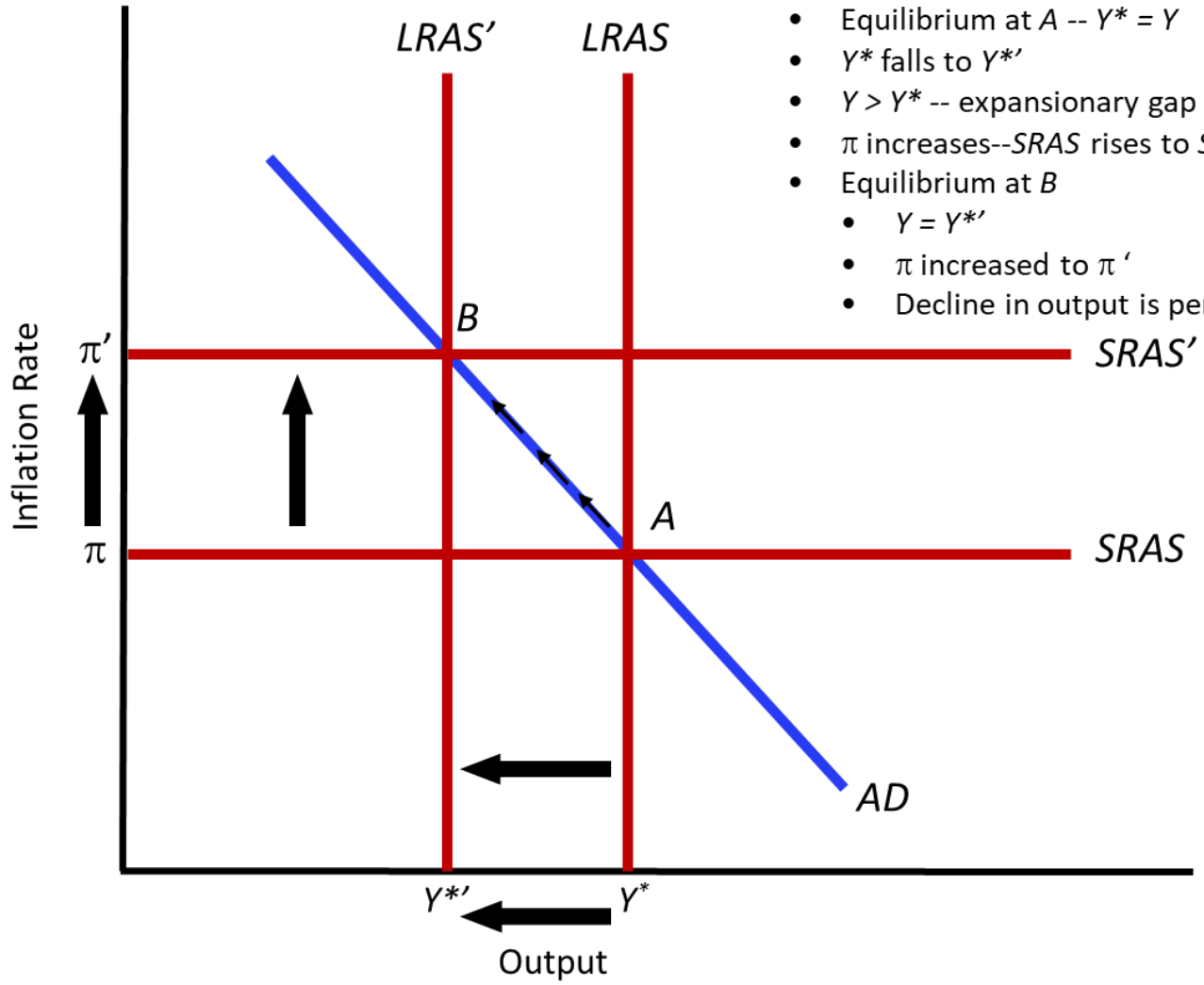
The Effects of a Shock To Potential Output



- Equilibrium at *A* -- *Y** = *Y*
- *Y** falls to *Y*'*
- *Y* > *Y** -- expansionary gap
- π increases--*SRAS* rises to *SRAS'*
- Equilibrium at *B*
  - *Y* = *Y*'*
  - π increased to π '
  - Decline in output is permanent

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U.S. Macroeconomic Data, Annual Averages, 1985-2000

Years	% Growth in real GDP	Unemployment rate (%)	Inflation rate (%)	Productivity growth (%)
1985-1995	3.0	6.3	3.5	1.4
1995-2000	4.3	4.6	2.5	2.4

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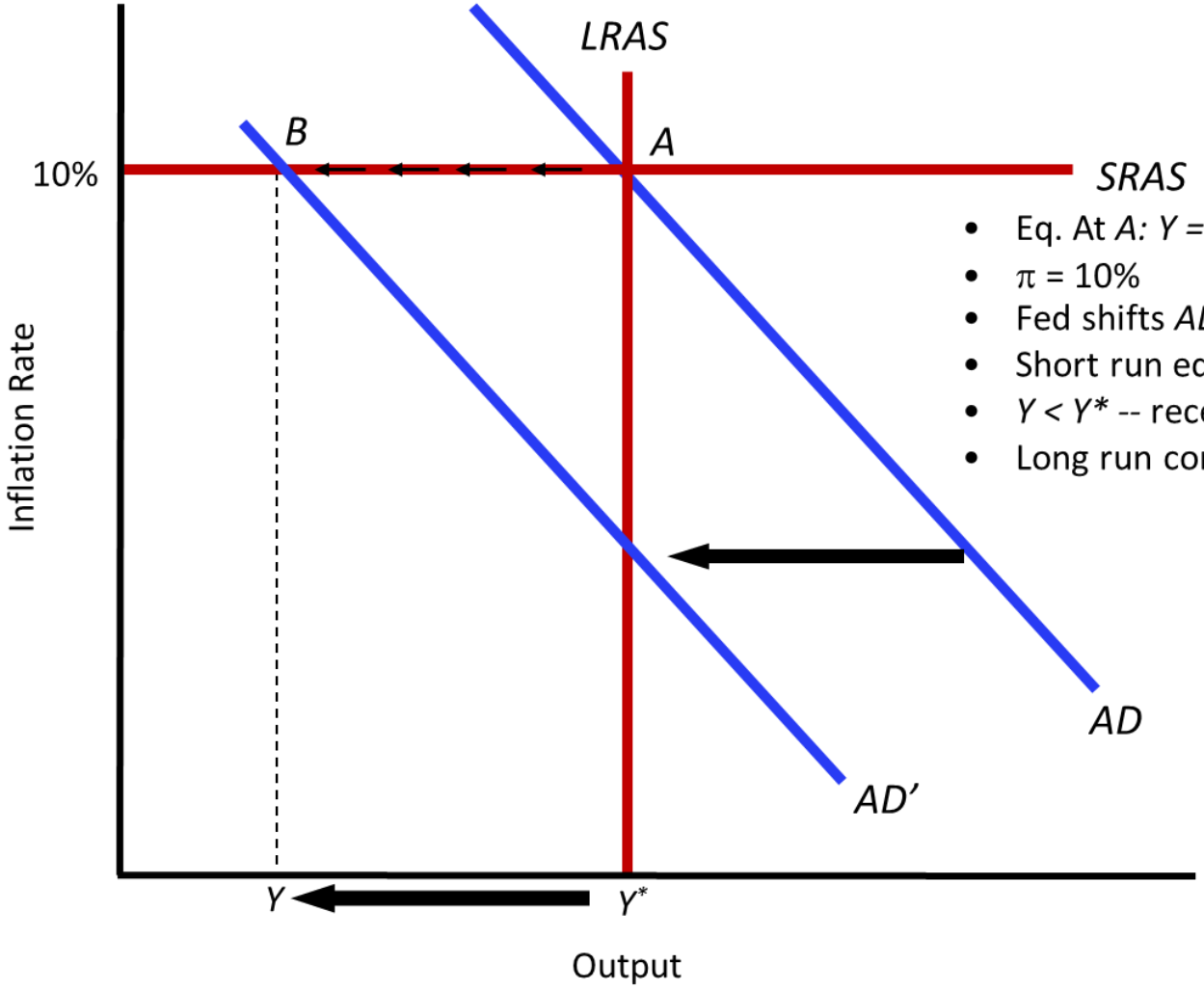
Short-Run Effects of an Anti-Inflationary Monetary Policy



- Eq. At *A: Y = Y**
- π = 10%
- Fed shifts *AD to AD'*
- Short run eq. At *B*
- *Y < Y** -- recessionary gap
- Long run correction occurs

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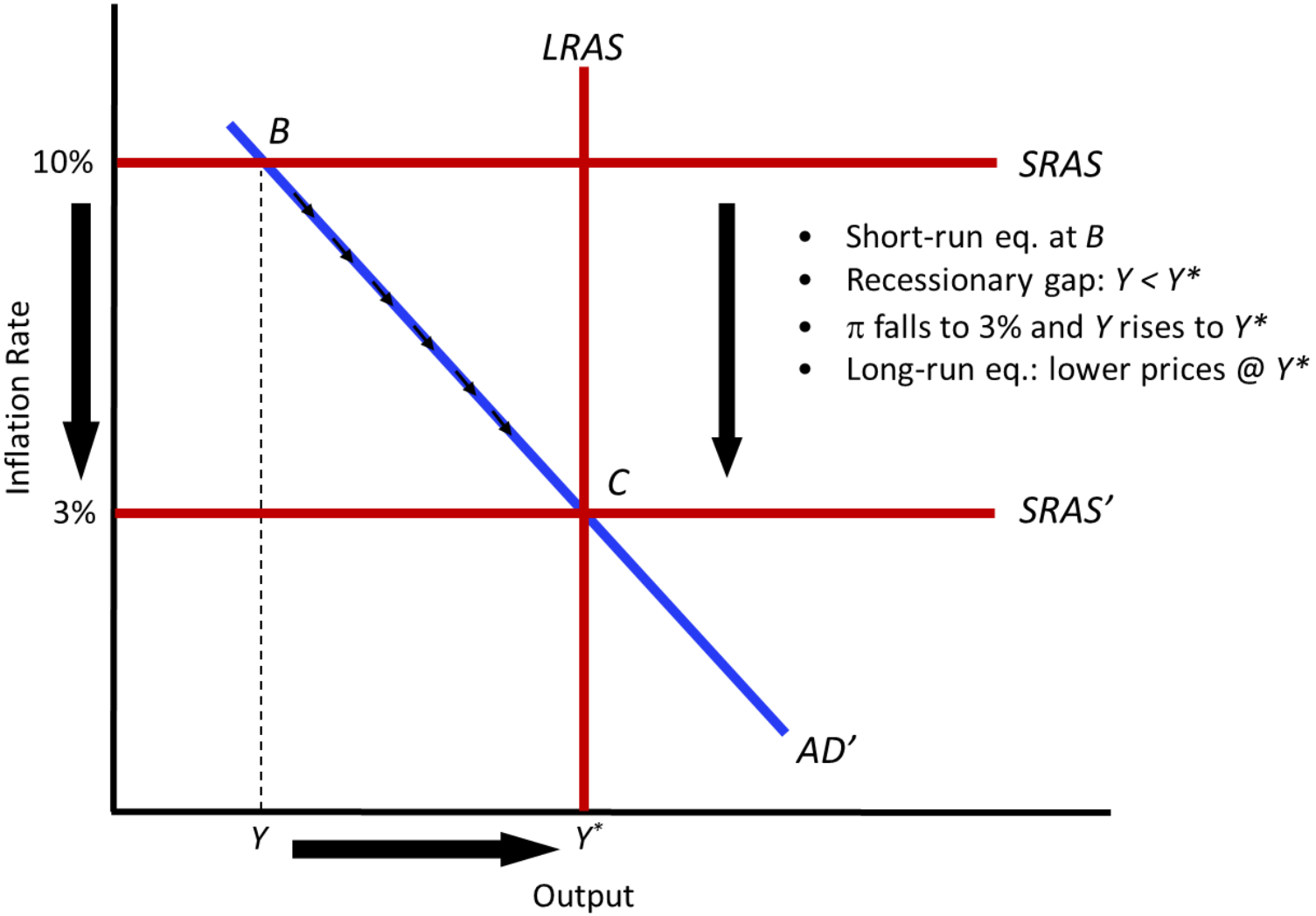
Long-Run Effects of an Anti-Inflationary Monetary Policy



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U.S. Macroeconomic Data, 1978-1985

Years	% Growth in real GDP	Unemployment rate (%)	Inflation rate (%)	Nominal interest rate (%)	Real interest rate (%)
1978	5.5	6.1	7.6	8.3	0.7
1979	3.2	5.8	11.3	9.7	-1.6
1980	-0.3	7.1	13.5	11.6	-1.9
1981	2.5	7.6	10.4	14.4	4.0
1982	-1.8	9.7	6.2	12.9	6.7
1983	4.6	9.6	3.2	10.5	7.3
1984	7.2	7.5	4.4	11.9	7.5
1985	4.2	7.2	3.5	9.6	6.1

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